SAR "Cheat Sheet"

Currents:

Sea Currents: "Generally" 300FT & 25NM offshore. (can be closer if you have the depth). Given in direction seas **going to**.
Wind Currents: "Generally" 100FT & 20NM offshore. (can be closer if you have an offshore wind). Given in direction winds **coming from**.
Tidal Currents: Coastal areas (usually within 3NM from shore).

Search Patterns:

V: (Sector pattern) Small search area. Small targets. High confidence in Datum (short response time). Multiple Datum passes.
S: (Square pattern) Small search area. "Usually" small target, Confidence in Datum is not as high (search object "may" drift in any direction.
P: (Parallel pattern) Equal probability of the search object being "anywhere" within the search area.
C: (Creep pattern) Same criteria as Parallel pattern. HOWEVER, evidence points to the search object being at one end more than another.
B: (Barrier pattern) Enclosed areas (rivers) where the direction of drift is obvious and enclosing the search object is paramount.

Definitions:

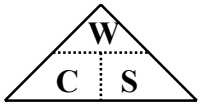
C: (Coverage factor)
De: The probable error in our drift calculatins (Sea currents, Wind currents, Other water currents, Leeway).
E: Total probable error (includes De, X, Y errors).
fs: (Search Factor)
EXCOMM: Contacting **all** possible sources of information on missing craft. Normally conducted after precomm.
POC: Probability of **containing** the search object within the search area.
POD: Probability of **detecting** the search object based on the given variables.
POS: Probability of **successfully** locating the search object the available resources.
PRECOM: Contact major facilities where craft might have been seen.
S: (Track Spacing) Assigned distance between each search leg.
TWC: (Total Water Current) Environmental factors (SC, WC, Tides, …) **NOT** including Leeway.
TSD: (Total Surface Drift) All environmental factors, Leeway **IS** included.
W: (Sweep Width) Calculated distance an SRU should be able to see a given object based on its speed and height/altitude.
X error: Error based on the accuracy of the navigation equipment type utilized by the **mariner** seeking assistance.
Y error: Error based on the accuracy of the navigation equipment type utilized by the **SRU**.

Calculations:

* **Effort (Z)** $Z = V \times W \times T$
* **Attainable Search Area (A)** $A = V \times S \times T \times N$ (N = # of same SRUs using same V, S, T).
* $POS = POD \times POC$
* $fs = R \div S$
* **Sweep Width (W)** $W = C \times S$
* **Coverage factor (C)** $C = W \div S$
* **Track Spacing (S)** $S = W \div C$
* **Sweep Width Correction (W)** $W = Wu \times fw \times ff \times fv$
* $E = \sqrt{D_e^2 + X^2 + Y^2}$

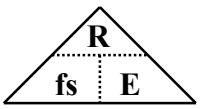
Coverage Formula

C = Coverage Factor
W = Corrected Sweep Width
S = Track Spacing



Search Factor Formula

R = Radius
fs = Search Factor
E = Total Probable Error



Information concerning the C2PC system: **C2PC Hotline (757) 686-2156**

Information concerning SAR issues: **National SAR School (757) 856-2380**

Notes:

* A **Coverage factor of 1** will always equal a **POD of 78%.**

* **Leeway Taxonomy:** Boston Whalers have their own category under "Skiff" within the "target descriptors".
  Liferafts have additional categories you must enter to increase the accuracy of your Leeway drift.

* **Sweep Width** calculations are for DAYTIME VISUAL searches ONLY!

* **Active targets** are targets which attract your attention and have no correction factor: Flares, Smoke, etc.

* **Electronic searches** such as radar have no correction factor.

* **Flare cases**, if you can reasonably determine a search object, then search for that object (example: a shark tournament with 50 boats of the same "basic" characteristic was held today, you "may" have reason to believe you are looking for a boat of this characteristic. If you are in a fishing community, and a flare was seen offshore, you may have reason to believe you are looking for a liferaft conducive to the type of fishing vessels in your area. If you cannot make a reasonable determination, then you may want to base your search on the following:
  "**power vessel, sports boat, cuddy cabin~ modified V-hull**". Otherwise, your other option is to draw out another flare.

* **Drifting a Flare**: When drifting a flare, remember you are drifting an "**AREA**".
  Drift the "Leeward" corners of the flare cone. This may mean drifting 2 or 3 corners.

* **Drifting a Trackline**: When drifting a trackline, you are drifting a "**LINE**", not a "point".
  Drift each waypoint along their intended trackline.

* **Search Endurance**: Reduce your on-scene endurance by 15% (x .85) to account for turns and sightings.

* **Weather Parameters**: If your weather parameters fall under "2" categories, use the higher category.

* **406 EPIRBS**: All 406 EPIRBs are initially classified as DISTRESS **except** LEO "B" type.

* **Risk Assessment**: NEVER ACCEPT HIGH RISK FOR LOW GAIN!
  (PEACE) **P**lanning **E**vent **A**sset **C**ommunications **E**nvironment
  (STAAR) **S**pread out **T**ransfer **A**void **A**ccept **R**educe

* **Public Affairs:** If you "own" it, you can talk about it. **NEVER** say "*No comment*." !!! Be honest, but be careful not to pass information inappropriate to the situation… deceased family notification, etc. NEVER GIVE PERSONAL OPINION!!!

* **Daylight Calculations**:
  (STANDARD Time): LAST Sunday in October, UNTIL the FIRST Sunday in April. "***Spring Forward***" **Gain** 1 hour of daylight.

  (DAYLIGHT SAVINGS): FIRST Sunday in April, UNTIL the LAST Sunday in October. "***Fall back***" **Lose** 1 hour of daylight.

* **Vectors**: Represents HOURLY vector if expressed in "KTS". Represents TOTAL vector if expressed in "NM".

* **DMB**: Best source of TWC. Cannot use DMB for "Initial" searches because time must pass in order to obtain an accurate TWC.

* **Rule of 500s**: When utilizing more than one aircraft, and cloud ceiling permits, maintain… 500 FT **above the surface**.
  If unable to obey this rule, ensure ALL personnel involved are aware of the situation! 500 FT **below the ceiling**.
  500 FT **between each aircraft**.

* **Uncorrelated Maydays**: At a minimum… **UMIB** every 15 minutes for 1 hour, aggressive radio range tracking to narrow possible search area.

* **Unlocated DSC Alerts**: At a minimum… **UMIB** every 15 minutes for 1 hour, aggressive radio range tracking to narrow possible search area. **(same as Uncorrelated Maydays.)**

* **CASP**: Used in cases **over 24 hours** and water depth **greater than 30 fathoms**.